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CLAIMS

- 1. Fuel cell comprising a membrane-electrode assembly including:
 - (a) an anode;
 - (b) a cathode; and
- 5 (c) a polymer electrolyte membrane interposed between the anode and the cathode,

wherein said polymer electrolyte membrane comprises a sulfonated polysulfone polymer having the following repeating units:

$$R_{10}$$
 R_{11}
 R_{13}
 R_{15}
 R_{15}
 R_{16}
 R_{16}
 R_{10}
 R_{10}
 R_{11}
 R_{12}
 R_{12}
 R_{14}
 R_{15}
 R_{16}

10 wherein

 R_{1} - R_{16} are independently hydrogen, a SO₃H group, a methyl group, an ethyl group or an optionally branched (C_{3-6})alkyl group, with the proviso that at least one of R_{1} - R_{16} is a SO₃H group;

n+m ranges between 10 and 1,000 included;

- n ranges between 0 and 999 included; and m ranges between 1 and 1,000 included, and salts thereof.
 - 2. Fuel cell according to claim 1 wherein at least one of R_{13} - R_{16} is a SO_3H group.
- 20 3. Fuel cell according to claim 1 wherein R₁-R₄ and R₉-R₁₂ is hydrogen.

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- 4. Fuel cell according to claim 2 wherein at least one of R_5 - R_8 and R_{13} R_{16} is SO_3H .
- Fuel cell according to claim 1 wherein said polymer electrolyte membrane comprises on a sulfonated polysulfone polymer having the following repeating units

$$(SO_3H)_x$$

$$CH_3$$

$$CH$$

wherein x+y is 1 and n=m.

- 6. Fuel cell according to claim 1 wherein said polymer has a sulfonic content of about 0.5-3.5 meg/g.
- 7. Fuel cell according to claim 5 wherein said polymer has a sulfonic content of about 0.7-2.3 meg/g.
 - 8. Fuel cell according to claim 6 wherein said polymer has a sulfonic content of about 0.8-1.3 meq/g.
 - 9. Fuel cell according to claim 1 wherein the polymer is amorphous.
- 15 10. Fuel cell according to claim 1 wherein catode and/or anode comprises a sulfonated polysulfone.
 - 11. Fuel cell according to claim 10 wherein said a sulfonated polysulfone polymer is a polymer having the repeating units as from claim 1.
 - 12. Fuel cell according to claim 1, which is a hydrogen fuel cell.
- 20 13. Membrane-electrode assembly including:
 - (a) an anode;
 - (b) a cathode; and

PCT/EP2002/014246

- (c) a polymer electrolyte membrane interposed between the anode and the cathode,
- wherein said polymer electrolyte membrane comprises a sulfonated polysulfone polymer having the repeating units according to anyone of the preceding claims.
- 14. An apparatus powered by a fuel cell according to anyone of claims 1 to 12.
- 15. Apparatus according to claim 14 selected from engine for vehicle transportation, power supply unit and electronic portable device.

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